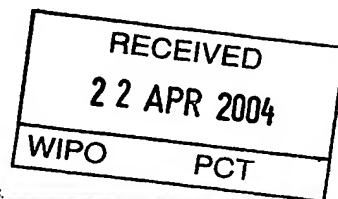


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# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office

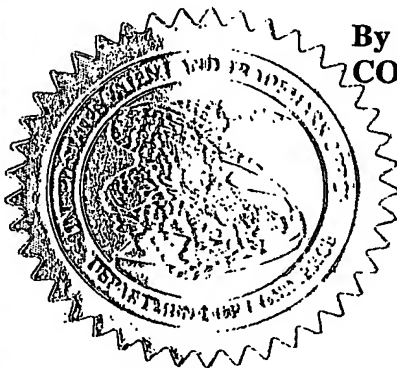
April 20, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.

APPLICATION NUMBER: 60/441,500

FILING DATE: January 21, 2003

RELATED PCT APPLICATION NUMBER: PCT/US04/01469



By Authority of the  
COMMISSIONER OF PATENTS AND TRADEMARKS

*N. Woodson*  
N. WOODSON  
Certifying Officer

**PRIORITY  
DOCUMENT**

SUBMITTED OR TRANSMITTED IN  
COMPLIANCE WITH RULE 17.1(a) OR (b)

01-22-03 60441500 03/22/2003 #

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Approved for use through 10/31/2002. OMB 0651-0032  
PTO/SB/16 (10-01)  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

## PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No.

EL542575066US

### INVENTOR(S)

Given Name (first and middle (if any))

Family Name or Surname

Residence  
(City and either State or Foreign Country)

Jordan S.

KAVANA

Miami, Florida

☐ Additional inventors are being named on the \_\_\_\_\_ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

VIRTUAL REALITY MUSICAL GLOVE SYSTEM

Direct all correspondence to:

### CORRESPONDENCE ADDRESS

☒ Customer Number

20822

Place Customer Number  
Bar Code Label here

OR

Type Customer Number here

☐ Firm or  
Individual Name

Address

Address

City

State

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Country

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### ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification Number of Pages

7

☐ CD(s), Number

☐ Drawing(s) Number of Sheets

☒ Other (specify)

Appendix (Pages 1-31)

☐ Application Data Sheet. See 37 CFR 1.76

### METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check or money order is enclosed to cover the filing fees

☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:

18-2262

☐ Payment by credit card. Form PTO-2038 is attached.

FILING FEE  
AMOUNT (\$)

\$80.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are:

Respectfully submitted

SIGNATURE

TYPED or PRINTED NAME Robert M. Schwartz

TELEPHONE 954-527-6252

Date 01/21/2003

REGISTRATION NO.  
(if appropriate)  
Docket Number:

29,854

47135-0003

## USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

January 21, 2003

COVER SHEET

Box PROVISIONAL PATENT APPLICATION  
Commissioner for Patents  
Washington, D.C. 20231

Re: New U.S. Provisional Patent Application  
Inventor: Jordan S. KAVANA  
Title: VIRTUAL REALITY MUSICAL GLOVE SYSTEM  
Attorney Docket No. 47135-0003

Sir:

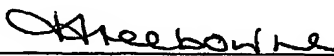
Enclosed are the following documents for filing:

- ☒ Fee Transmittal Form (in duplicate) with authorization to charge fees – 2 pages
- ☒ Provisional Application with Patent Cover Sheet (in duplicate) – 2 pages
- ☒ Specification - 7 pages
- ☒ Appendix – 31 pages
- ☒ Return Receipt Postcard

These documents enclosed and referenced herein are being submitted under the "Express Mail" filing provisions, 37 CFR 1.10, and a filing date corresponding to the date of deposit is respectfully requested.

EXPRESS MAIL "mailing label No. EL542575066US – Deposited: January 21, 2003  
Certificate of Mailing under 37 CFR 1.10

I hereby certify that these Papers are being deposited with the United States Postal Service "Express Mail Post Office to Addressee: service under 37 CFR 1.10 on the date indicated above and addressed to: BOX PROVISIONAL PATENT APPLICATION, Commissioner for Patents, Washington, D.C. 20231 on January 21, 2003.

  
Vernice V. Freebourne

January 21, 2003  
Date

6044-1500-012103

PTO/SB/17 (10-01)

Approved for use through 10/31/2002. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**FEE TRANSMITTAL  
for FY 2002**

Patent fees are subject to annual revision.

**Complete if Known**

Application Number	
Filing Date	
First Named Inventor	Jordan S. KAVANA
Examiner Name	
Group Art Unit	
Attorney Docket No.	47135-0003

TOTAL AMOUNT OF PAYMENT (\$ 80.00

**METHOD OF PAYMENT**

- 1.
- ☒
- The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number	18-2262
Deposit Account Name	Ruden, McClosky, Smith, Schuster & Russell, P.A.

☒ Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17☒ Applicant claims small entity status. See 37 CFR 1.27

- 2.
- ☐
- Payment Enclosed:

☐ Check ☐ Credit card ☐ Money Order ☐ Other**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101 740	201 370	Utility filing fee	
106 330	206 165	Design filing fee	
107 510	207 255	Plant filing fee	
108 740	208 370	Reissue filing fee	
114 160	214 80	Provisional filing fee	80.00

SUBTOTAL (1) (\$ 80.00

**2. EXTRA CLAIM FEES**

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	-20** =	X	
Multiple Dependent	-3** =	X	

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
103 18	203 9	Claims in excess of 20
102 84	202 42	Independent claims in excess of 3
104 280	204 140	Multiple dependent claim, if not paid
109 84	209 42	** Reissue independent claims over original patent
110 18	210 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

\*\*or number previously paid, if greater; For Reissues, see above

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
105 130	205 65	Surcharge - late filing fee or oath	
127 50	227 25	Surcharge - late provisional filing fee or cover sheet	
139 130	139 130	Non-English specification	
147 2,520	147 2,520	For filing a request for <i>ex parte</i> reexamination	
112 920*	112 920*	Requesting publication of SIR prior to Examiner action	
113 1,840*	113 1,840*	Requesting publication of SIR after Examiner action	
115 110	215 55	Extension for reply within first month	
116 400	216 200	Extension for reply within second month	
117 920	217 460	Extension for reply within third month	
118 1,440	218 720	Extension for reply within fourth month	
128 1,960	228 980	Extension for reply within fifth month	
119 320	219 160	Notice of Appeal	
120 320	220 160	Filing a brief in support of an appeal	
121 280	221 140	Request for oral hearing	
138 1,510	138 1,510	Petition to institute a public use proceeding	
140 110	240 55	Petition to revive - unavoidable	
141 1,280	241 640	Petition to revive - unintentional	
142 1,280	242 640	Utility issue fee (or reissue)	
143 460	243 230	Design issue fee	
144 620	244 310	Plant issue fee	
122 130	122 130	Petitions to the Commissioner	
123 50	123 50	Processing fee under 37 CFR 1.17(q)	
126 180	126 180	Submission of Information Disclosure Stmt	
581 40	581 40	Recording each patent assignment per property (times number of properties)	
146 740	246 370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149 740	249 370	For each additional invention to be examined (37 CFR § 1.129(b))	
179 740	279 370	Request for Continued Examination (RCE)	
169 900	169 900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)

**SUBMITTED BY**

Name (Print/Type)

Robert M. Schwab

Registration No.

29,854

**Complete (if applicable)**

Telephone

954-527-6252

Signature

Date

01/21/2003

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
PROVISIONAL PATENT APPLICATION

Title: VIRTUAL REALITY MUSICAL GLOVE SYSTEM

Inventor: Jordan S. KAVANA  
Miami, Florida

TECHNICAL FIELD OF THE INVENTION

This invention relates generally to a sound effects device. More specifically, the present invention relates to a user controlled sound effects device that incorporates at least one wireless transmitter and at least one wireless receiver that permits the user to play a variety of musical sound effects which are stored in the device.

BACKGROUND OF THE INVENTION

At the present time, there are a wide variety of sound effect devices designed within toys and the like. These sound effects are usually of poor quality and add to increase the cost of the toy. Furthermore, many toys are not equipped with sound effects. If a child possesses a wide variety of toys (toy guns, dolls, space ships, cars, dinosaurs, figurines, etc.) not equipped with sound effects, the child must improvise by creating his/her own sound effects.

For example, there are many toys for sale in today's market, however, none of the prior art sound effect devices provide the user with the ability to alter the order of sounds in a toy's programmed list of sound effects. In other words, the toy is limited to the order of the sound effects contained inside the toy as provided by the manufacturer. Second, when a child plays with a toy that contains sound effects, it is often difficult and disruptive for the child to manually push buttons on the object and play at the same time. Prior art designs simply do not allow the user to control the sound effects while playing with the toy in a more natural, realistic, or coordinated manner. In addition, such toys do not help develop the child's hand-eye coordination. Another disadvantage of prior art designs is the relatively poor sound quality.

"Data" gloves have been proposed for use as input devices for computer systems. For example, there are data gloves that use fiber-optic flexion sensors to determine how much each finger on the glove is bent. Such gloves also use an ultrasonic position sensor and a mercury switch orientation sensor mounted on the back-hand surface of the glove to determine the location of the glove and send this information to the computer used with the glove.

Other data gloves are designed to replace a computer keyboard. Such gloves used flex sensors and electrical contacts

on the fingertips to determine static positions representing the characters of the alphabet or engage contacts on the fingertips to be used as an input device for a video game.

The data gloves can be used in virtual reality environments with varying degrees of complexity. By correlating the position of the hand and the shape of the hand as sensed by the sensors on the glove to the position, shape and assigned function of a virtual object within the virtual environment, the host computer can interpret hand positions as instructions to manipulate the objects. More simply, by sensing the shape of the hand, the host computer can interpret the input as commands to the host system.

In flex sensing gloves, the glove can sense whether the glove is bent or not, but cannot accurately sense the degree of bend. In general, glove flexion of the fingers has not been used for rate control because the sensing is too difficult and the feedback to the user is not sufficiently accurate for efficient control. Virtual environment parameters such as the speed of flying have not generally been tied to the degree of the bend of a finger, and the firmness of grasp is not tied to how tightly a fist is made.

Additionally, methods of performing music on an electronic instrument are also known, and may typically be classified in either of three ways: (1) a method in which automatic chord progressions are generated by depression of a key or keys (for

example, Cotton Jr., et al., U.S. Pat. No. 4,449,437), or by generating a suitable chord progression after a melody is given by a user (for example, Minamitaka, U.S. Pat. No. 5,218,153); (2) a method in which a plurality of note tables is used for MIDI note-identifying information, and is selected in response to a user command (for example, Hotz, U.S. Pat. No. 5,099,738); and (3) a method in which performance of music on an electronic instrument can be automated using an indication system (for example, Shaffer et al., U.S. Pat. No. 5,266,735).

The first method of musical performance involves generating pre-sequenced or preprogrammed accompaniment. This automatic method of musical performance lacks the creativity necessary to perform music with the freedom and expression of a trained musician. This method dictates a preprogrammed accompaniment without user-selectable modifications in real-time, and is therefore unduly limited.

The second method of musical performance does not allow for all of the various note groups and/or features needed to initiate quality performance, with little or no training.

Thus, a need exists for a toy virtual reality glove that permits a user to generate and perform a variety of quality musical sound effects in a free form manner while developing increased coordination skills.



## SUMMARY OF THE INVENTION

The present invention eliminates the above-mentioned needs for a toy virtual reality glove that permits a user to generate and perform a variety of quality musical sound effects in a free form manner while developing increased coordination skills

In accordance with the present invention, there is provided a virtual reality musical glove comprising a glove body having a plurality of finger pad sensors positioned in a first orientation, including a thumb sensor positioned in a second orientation; at least one wireless transmitter mounted on said glove body electrically connected to said plurality of finger pad sensors, and electrically connected to a power source; at least one wireless receiver to receive a signal generated by said at least one wireless transmitter; a signal generator to produce electronic signal indicative of music produced by a musical instrument, operatively engaged to said wireless transmitter and operatively actuated by at least one sensor of said plurality of finger sensors, wherein said electronic signal is transmitted by said wireless transmitter to said wireless receiver; and a sound generator to convert said electronic signal to a musical tone, operatively engaged to said wireless receiver

Although only a few exemplary embodiments of the present invention have been described in detail above and in the

accompanying Appendix, those skilled in the art will readily appreciate that numerous modifications are to the exemplary embodiments are possible without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention as defined in the following numbered paragraph and accompanying Appendix.

A further description of the preferred embodiment is detailed in the numbered paragraphs as follows:

1. A virtual reality musical glove, comprising:

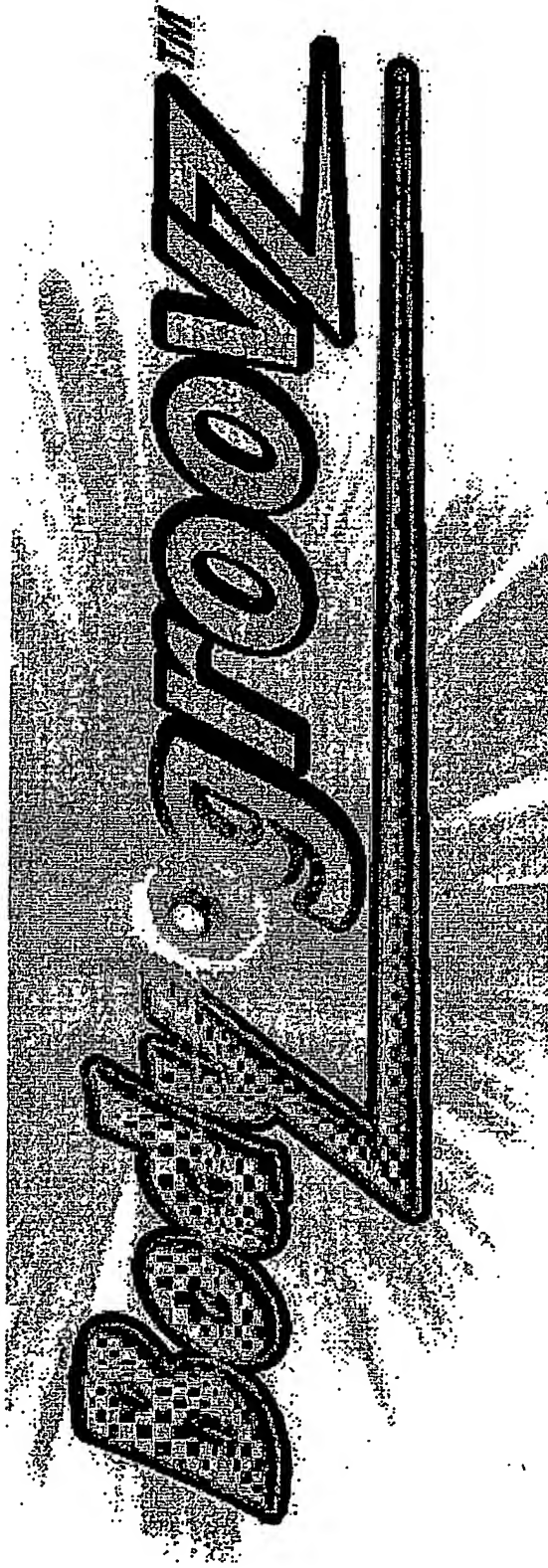
a glove body having a plurality of finger pad sensors positioned in a first orientation, including a thumb sensor positioned in a second orientation;

at least one wireless transmitter mounted on said glove body electrically connected to said plurality of finger pad sensors, and electrically connected to a power source;

at least one wireless receiver to receive a signal generated by said at least one wireless transmitter;

a signal generator to produce electronic signal indicative of music produced by a musical instrument, operatively engaged to said wireless transmitter and operatively actuated by at least one sensor of said plurality of finger sensors, wherein said electronic signal is transmitted by said wireless transmitter to said wireless receiver; and

a sound generator to convert said electronic signal to a musical tone, operatively engaged to said wireless receiver.



VR-HandBand

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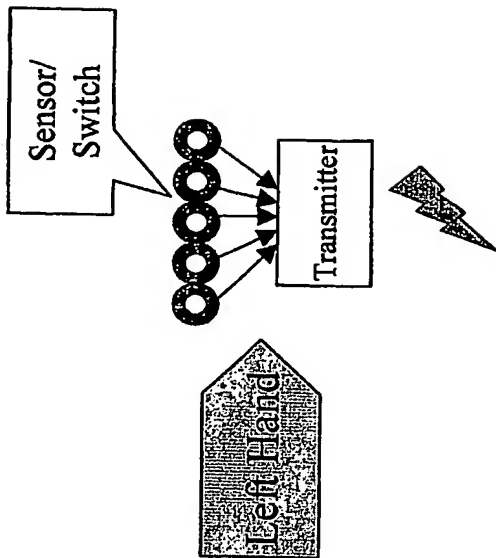
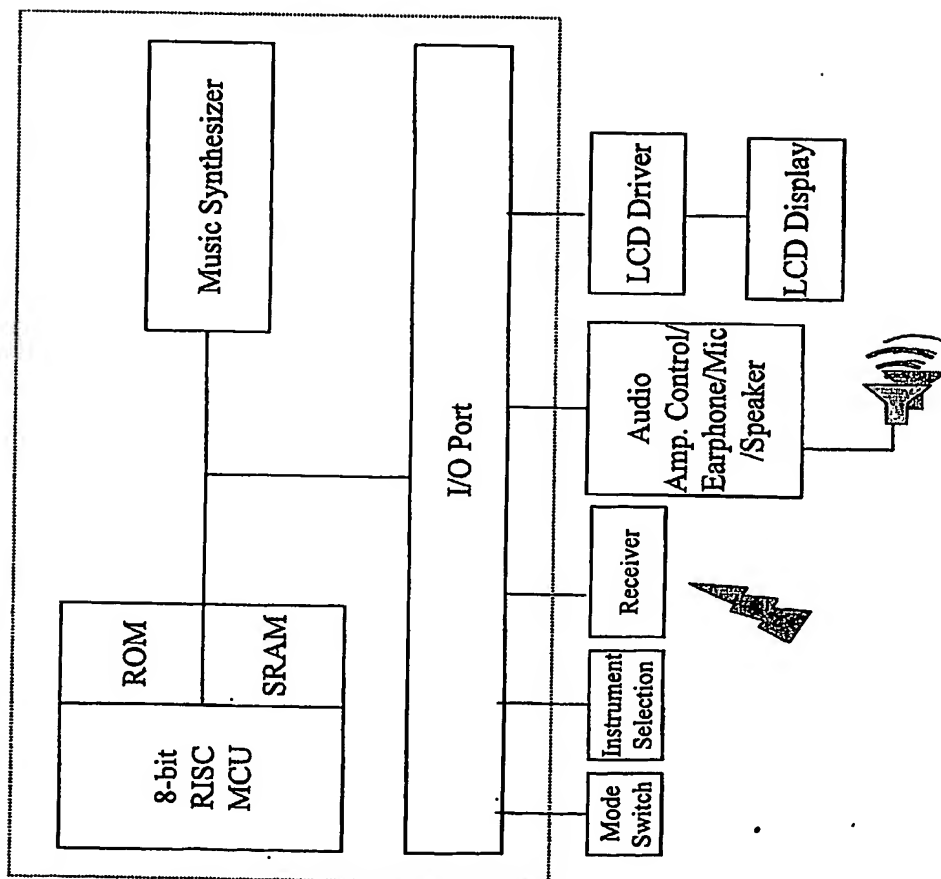
# Targets

- Funny.
- Simple for Operation.
- Wireless Transceiver.
- Play with Virtual Reality.
- High Technology Shape.
- Reasonable Cost.
- Easy to Mass Production.

A 2

# Diagram of System-I With LCD Screen

System on  
Right Hand



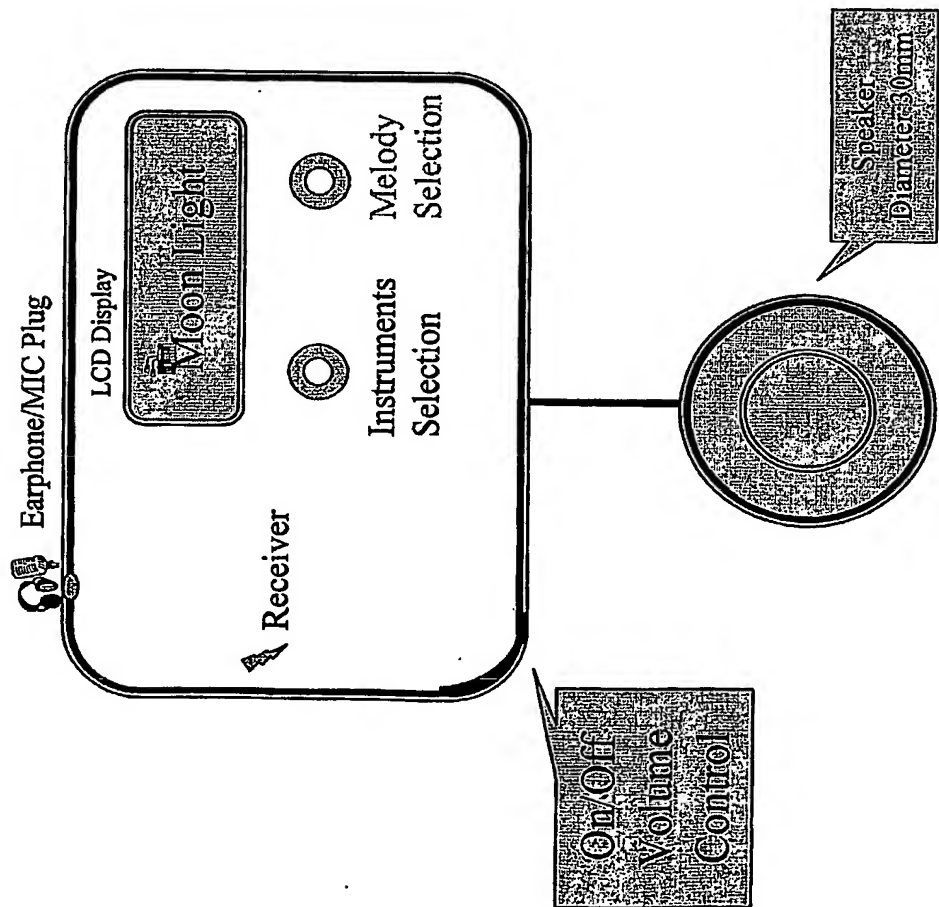
Wireless  
Signal Transmit  
To Right Hand's  
Receiver

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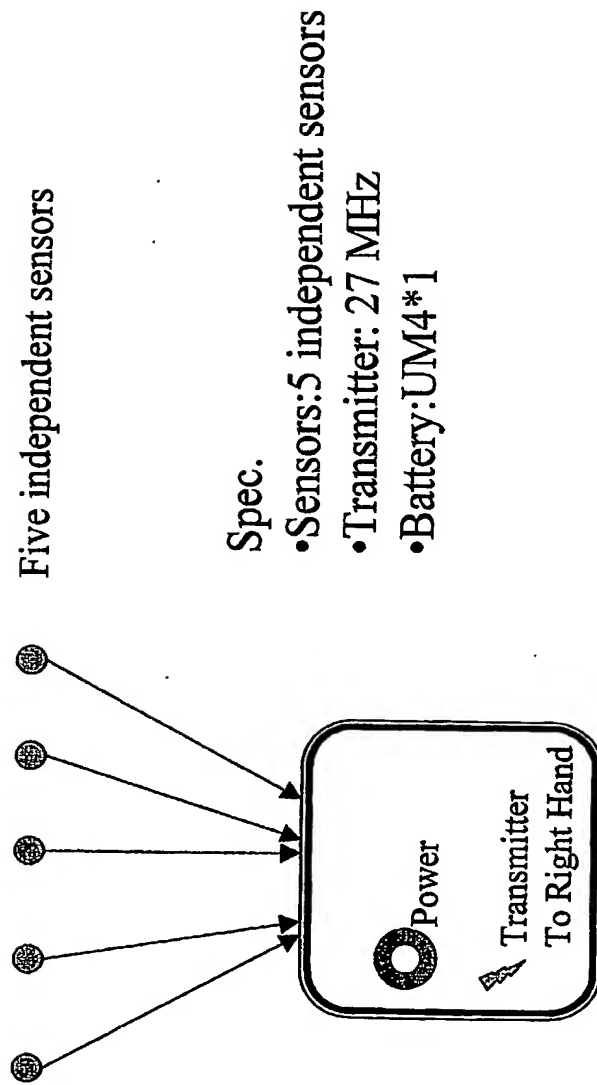
# Outline of Right Hand-I

- Spec.:
1. Sensors: 5 High tech independent sensors.
  2. Wireless: Receiver 27 MHz
  3. Battery: UM-4\*2
  4. LCD display 1"\*.5" shows the melody and instrument
  5. Speaker: 30mm High quality speaker.
  6. Earphone/MIC
  7. Melody IC: 8 Channels IC (Designed for Electronic Piano Market)
  8. On/Off & Volume Control in one knob.
  9. Estimated size:
  10. Estimated weight:

- Functions:
- 3 instruments for selection.
  - Mode I: Playing user's melody.
  - Mode II: Auto play, rhythm according to user's fingers motion speed.



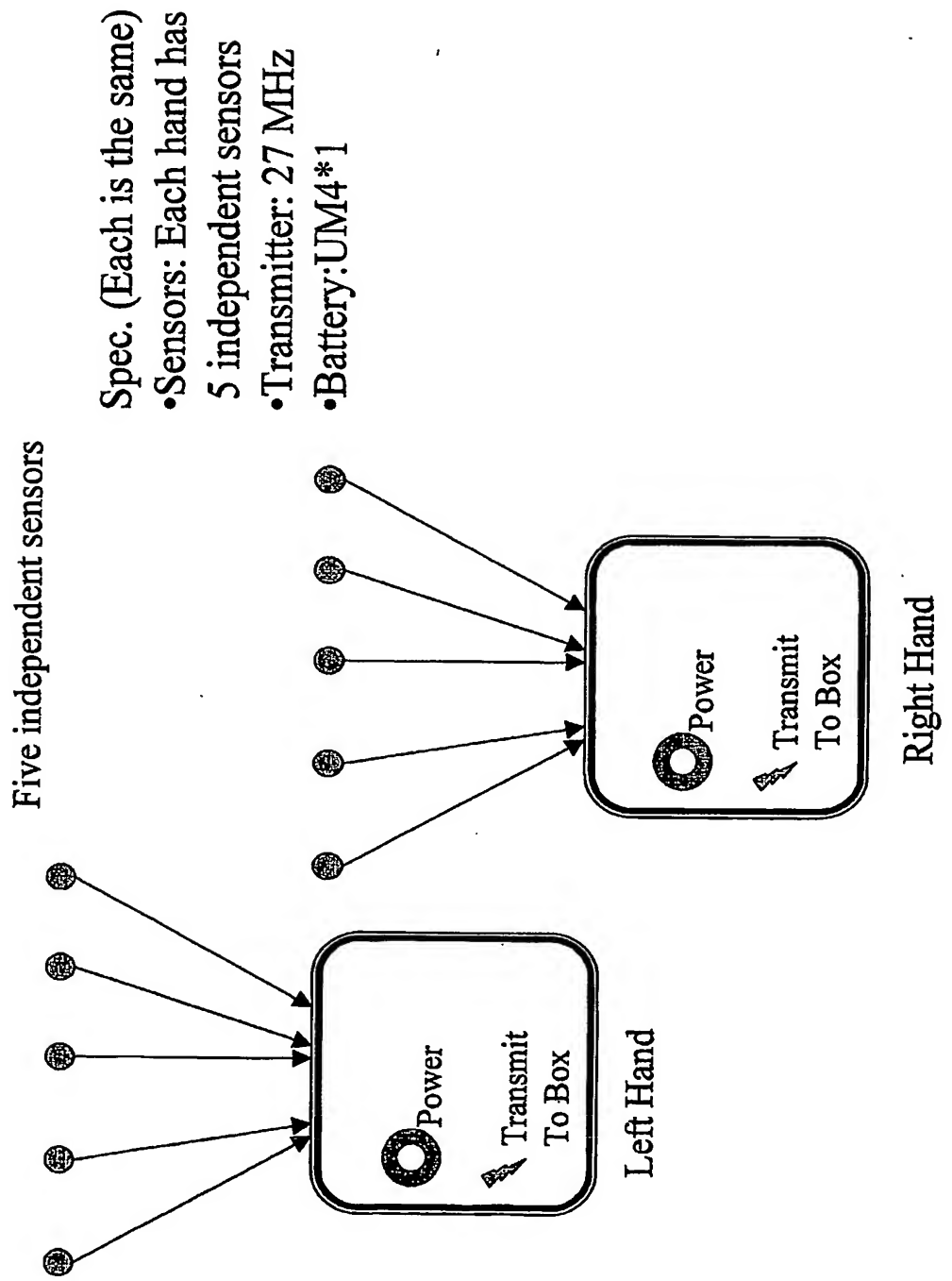
# Diagram of Left Hand-I & II



A5



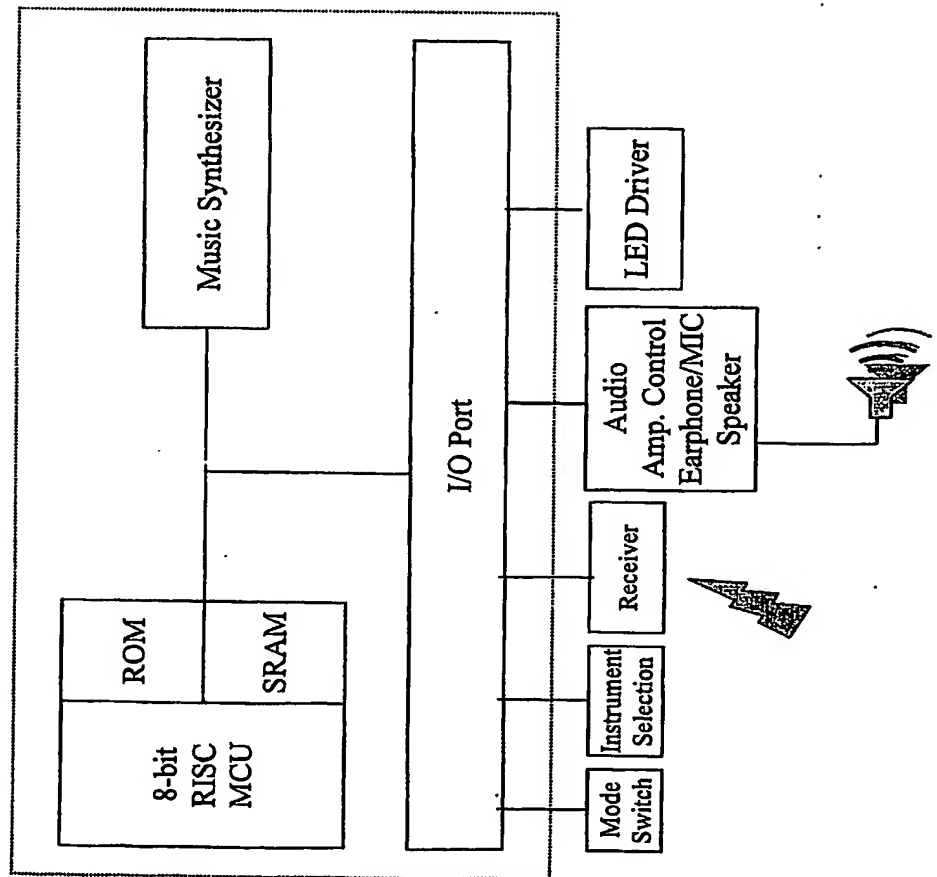
# Diagram-Left & Right Hand-III



A6

# Diagram of System-II Without LCD Screen

System on  
Right Hand



A7

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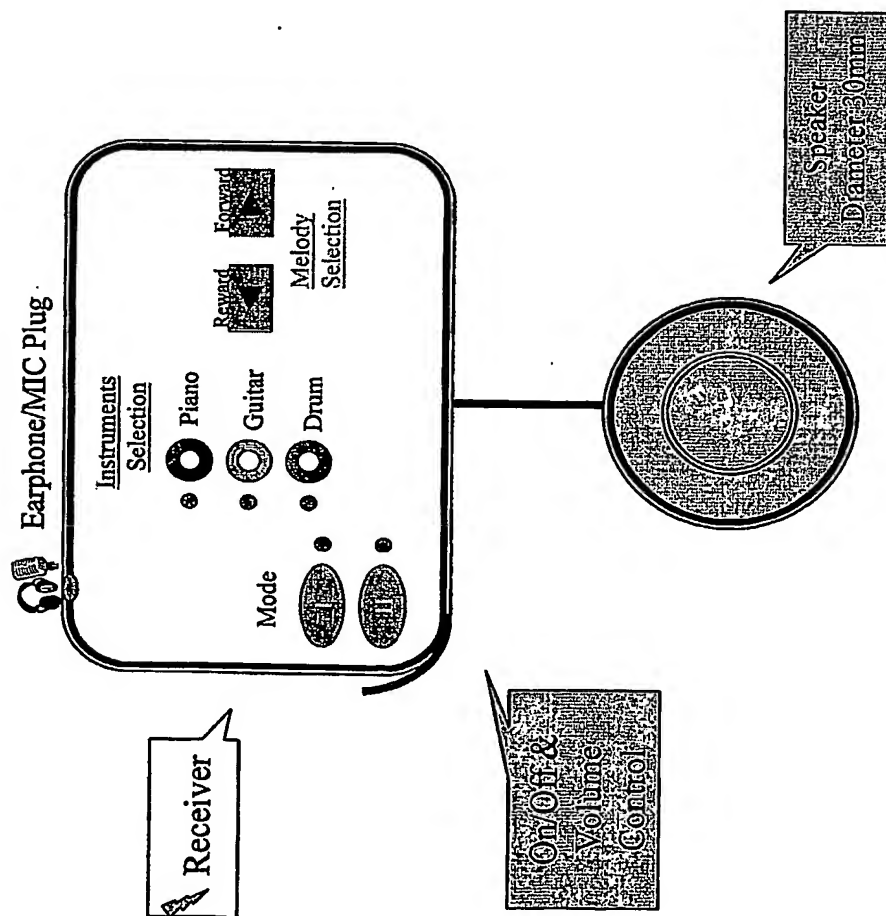
# Outline-Right Hand-II

## Spec.:

- 1.Sensors:5 High tech independent sensors
- 2.Wireless: Receiver 27 MHz
- 3.Battery: UM-4(AAA)\*2
- 4.LED status indicator
- 5.Speaker: 30mm High quality speaker.
- 6.Earphone/MIC
- 7.Melody IC: 8 Channels IC (Designed for Electronic Piano Market)
- 8.On/Off & Volume Control in one knob.
- 9.Estimated size:
- 10.Estimated weight:
- 11.10 melodies build inside.

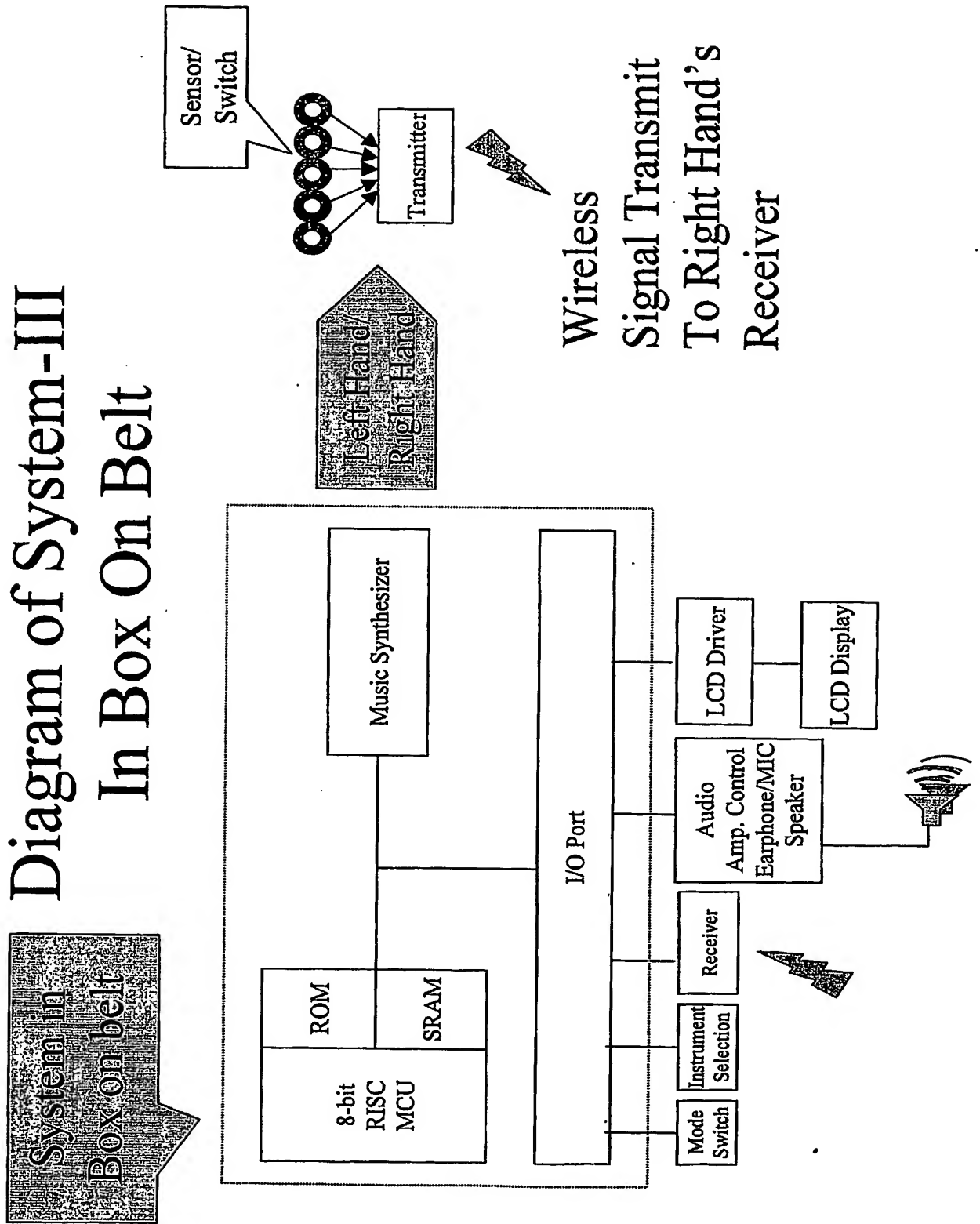
## Functions:

- 3 instruments for selection.
- Mode I: Playing user's melody.
- Mode II: Auto play, rhythm according to user's fingers motion speed.

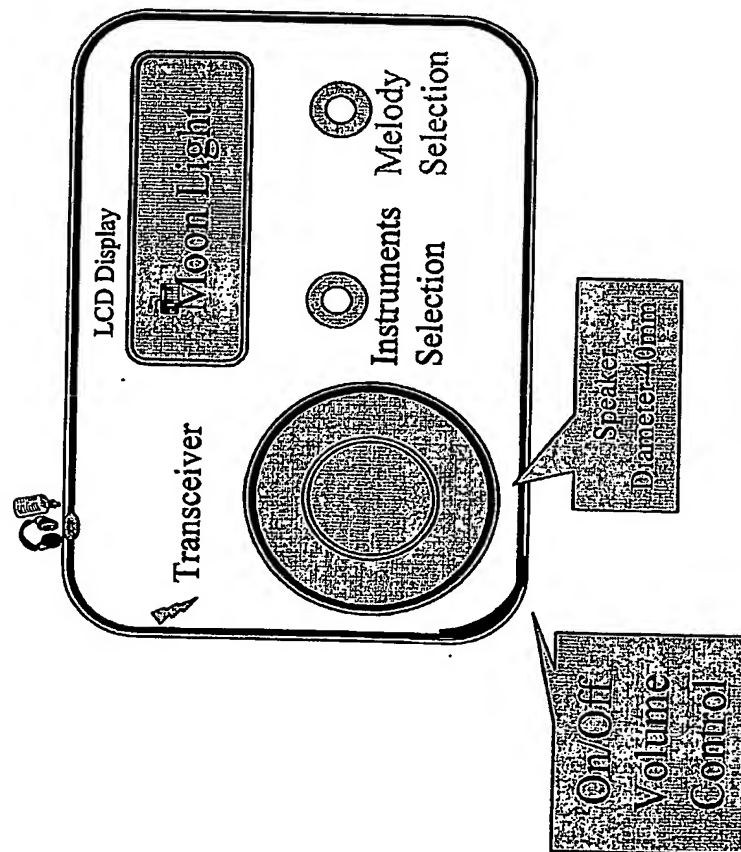


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# Diagram of System-III In Box On Belt



# Outline-Right Hand-III



## Spec.:

1. Sensors: 5 High tech independent sensors
2. Wireless: Receiver 27 MHz
3. Battery: UM-4\*2
4. LCD display shows the melody and instrument
5. Speaker: High quality speaker.
6. Earphone/MIC
7. Melody IC: 8 Channels IC (Designed for Electronic Piano Market)
8. On/Off & Volume Control in one knob.
9. Estimated size:
10. Estimated weight:

## Functions:

- 3 instruments for selection.
- Mode I: Playing user's melody.
- Mode II: Auto play, rhythm according to user's fingers motion speed.

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# Play Instruction of Piano

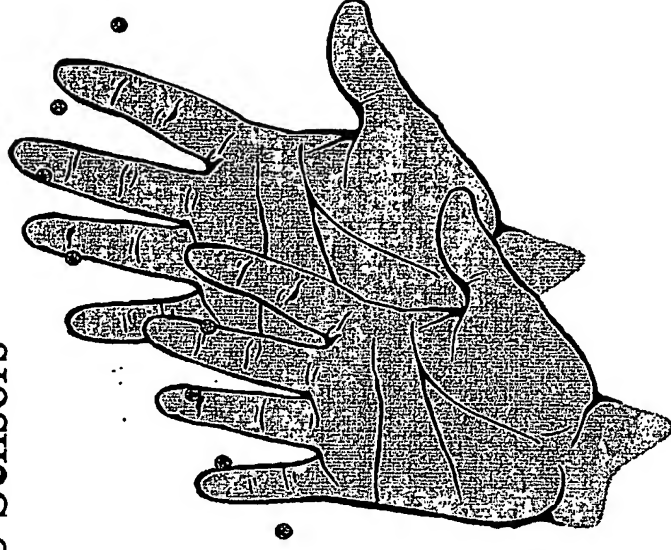
- Mode I

Each palm has four touch sensors.  
Eight sensors play eight tones; Do  
Re Mi Fa So La Si Do.

- Mode II

Melodies auto play when user's  
fingers touched on the plate, and  
the rhythm according to the user's  
motion speed.

- 8 Sensors

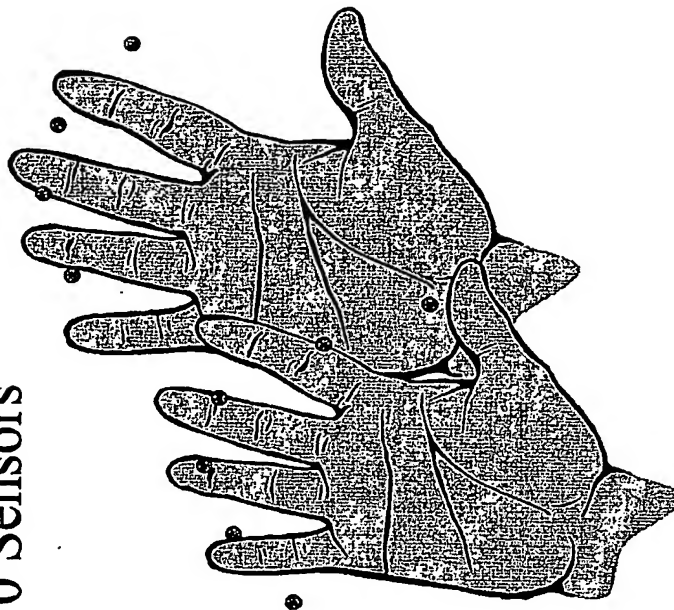


# Play Instruction of Drums

- Mode I

- Mode II

- 10 Sensors



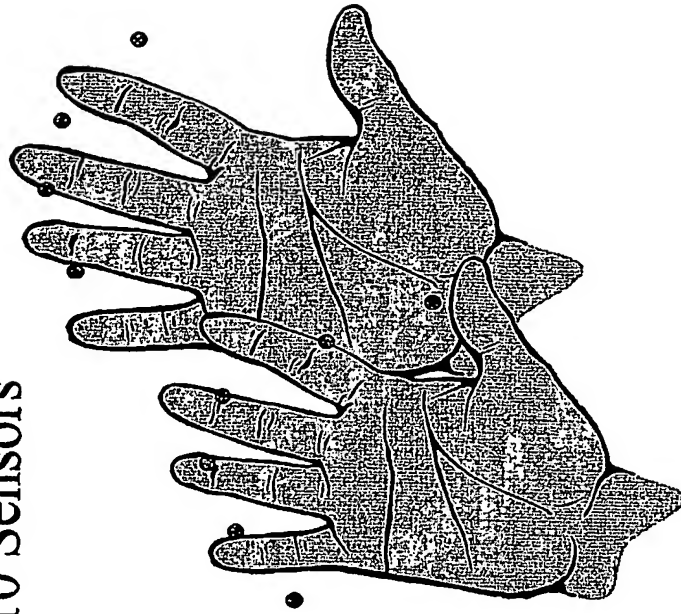
A 12

# Play Instruction of Guitar

- Mode I

- Mode II

- 10 Sensors



A13

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# K-Group Industries, LLC K-Group Industries, LTD

- Personal & Confidential

- Prepared By: KGI-U.S.

- Accompanying Documents:

- a) Confidentiality & No compete Agreement

- b) Non-Disclosure & Consulting Agreement

# Project Definition

- Category/Brand: Body-Groovz©
- Product Name: HandBand Glovz®  
(Percussion/Wind Series)
- Target Age Group: B&G 7-12 Years
- Markets: U.S., Europe & Canada
- Release: July, 2003
- Target Cost: US\$7.63\*

A 15

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# Concept "A" Definition-Gloves & Belt Console

- Belt Console: Different IC's representing different instrument sounds.
- LCD Screen with mode selector-Electric Guitar, Keyboard, Drum Machine.
- Belt console contains internal speaker (3") with wireless FM transmission capability.
- Belt console contains sound effects buttons (6), volume control, Internal/External sound switch

# Concept "A" Definition (Cont.)

- HandBand Glovz®-Neoprene/Elastic gloves fitted with sensors on fingertips and finger joints.
- Depending on which mode selector is active, the activation of one sensor or several together will produce distinct sounds

# Concept "B" Definition-Gloves as full-purpose product

- Right & Left handed glove contain IC's built in
- Contain the LCD screen and corresponding mode selector
- Integrated speaker (3")
- FMI Wireless transmitter
- Volume Control/Special Effects Buttons
- Headset Connecton

# HandBand Glovz® Concept

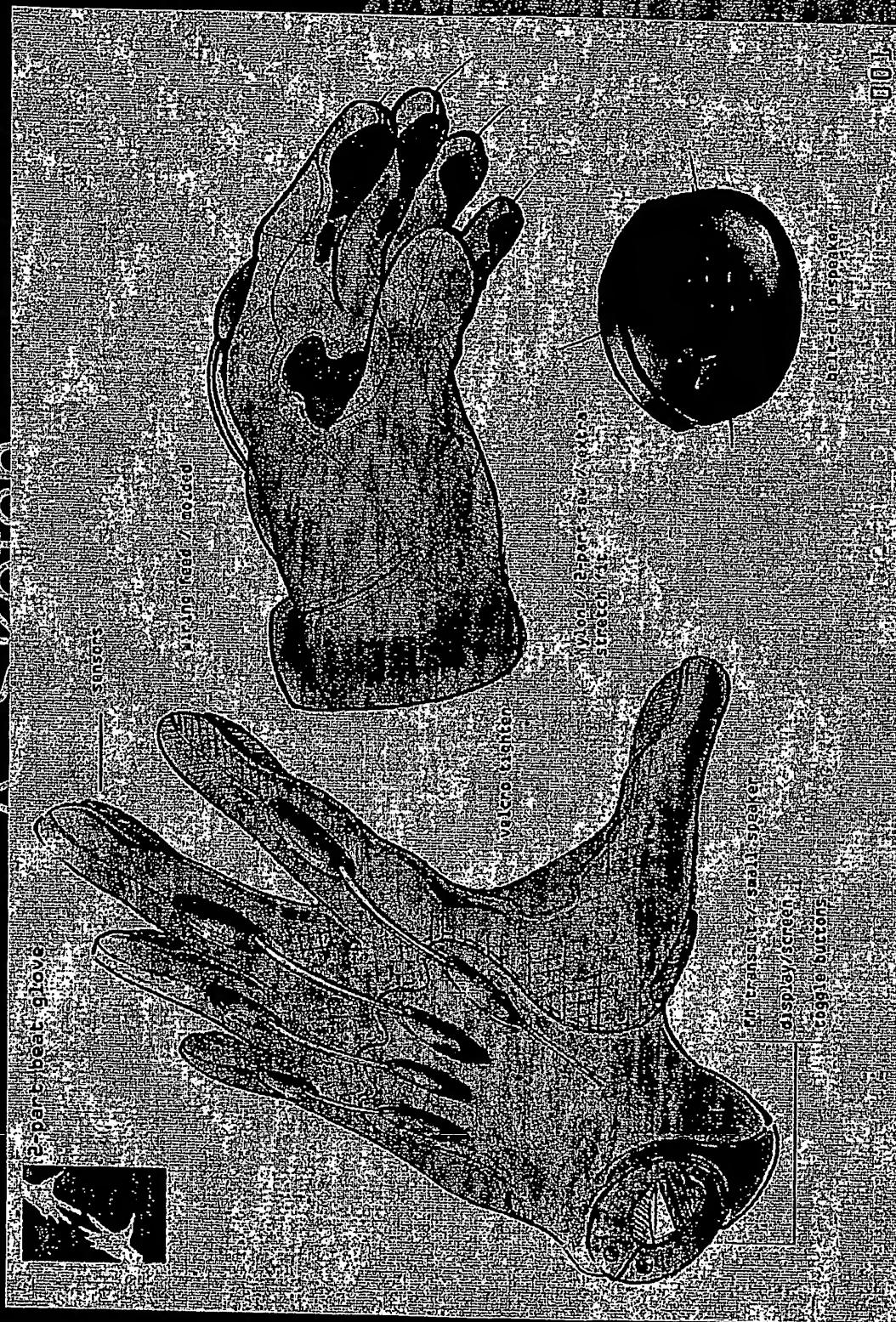
# "A" Sketch





# HandBand Glovz® Concept

"A" sketch



201210-00514409

# HandBand Glovz® Concept

## "B" Sketch

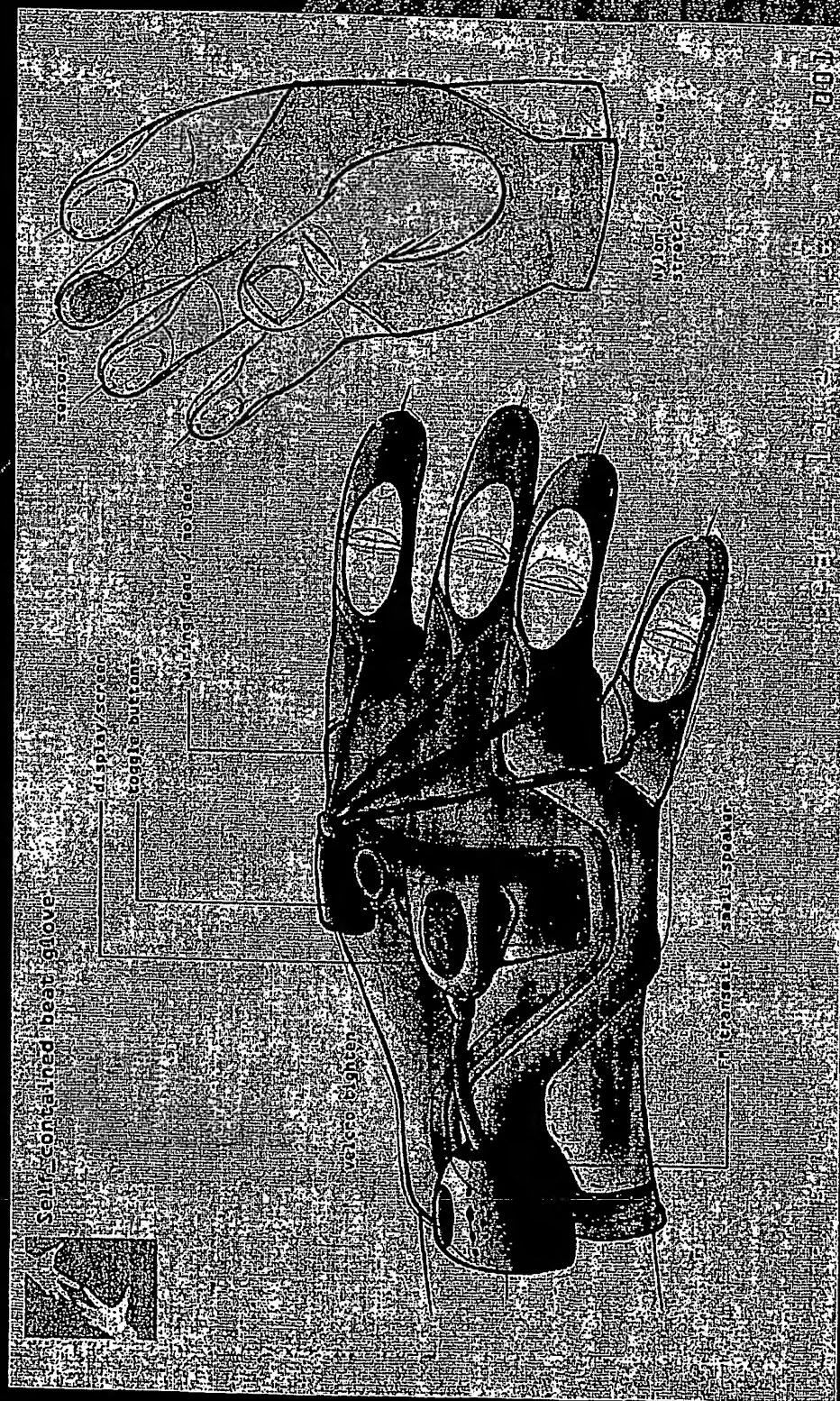


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# HandBand Glovz® Concept "B" Sketch

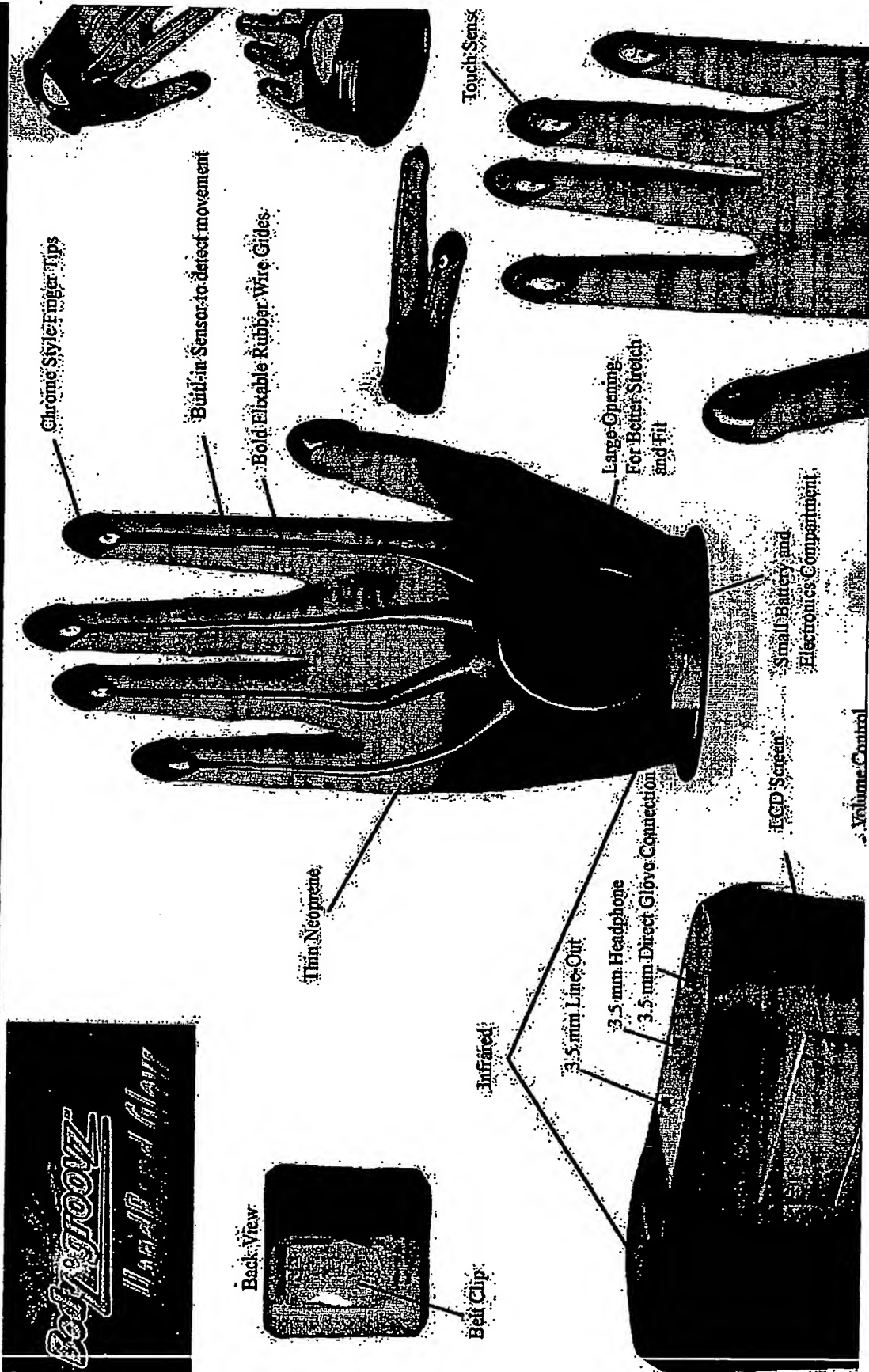


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# HandBand Glovz® Wind Instrument Series (Concept

“A” or “B”)

- Main Unit: Same characteristics
- LCD Screen with mode selector-  
Harmonica, Trumpet, Saxophone

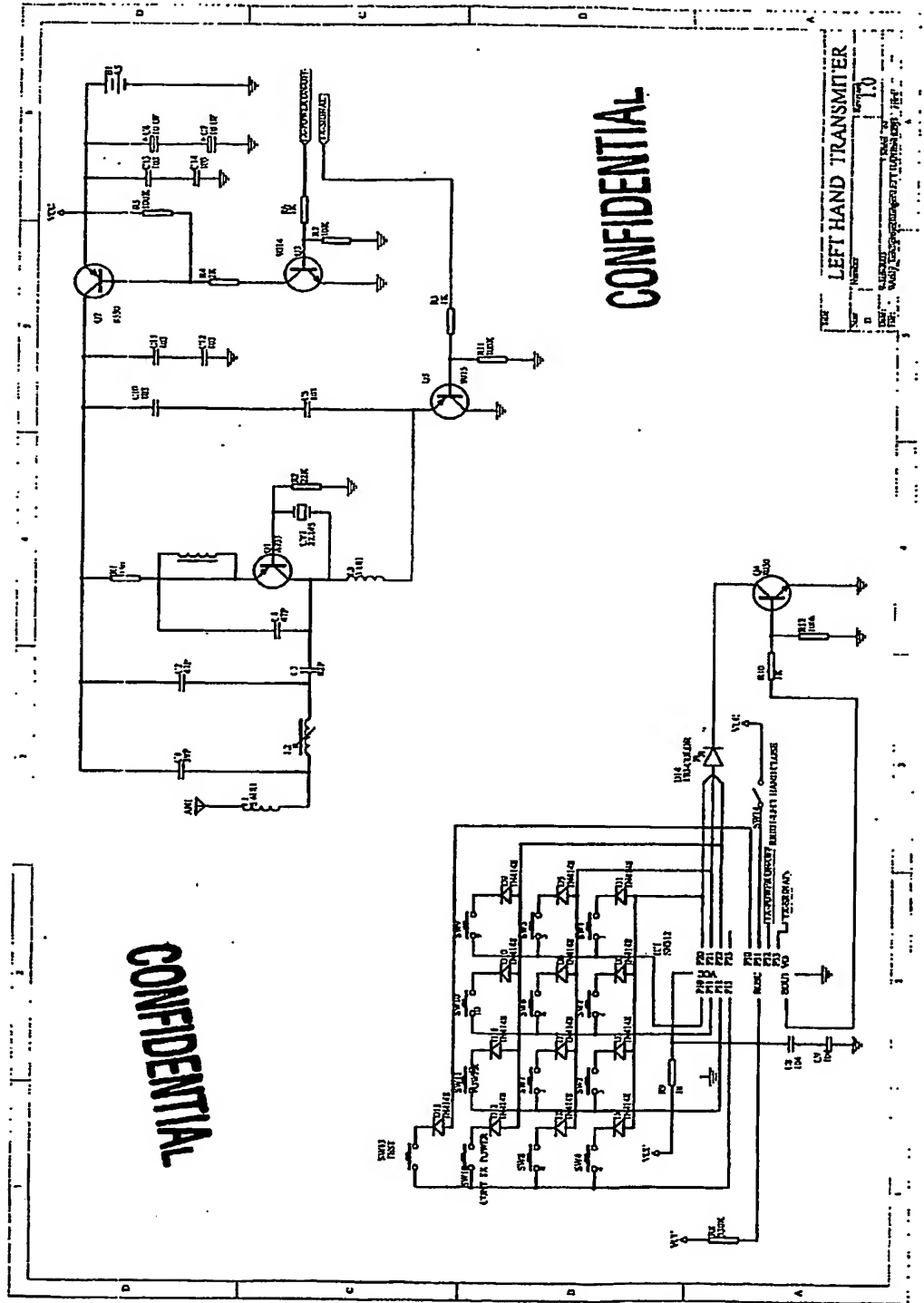




開達實業有限公司  
KADER INDUSTRIAL COMPANY LIMITED

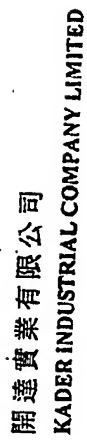
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**KADER INDUSTRIAL COMPANY LIMITED**

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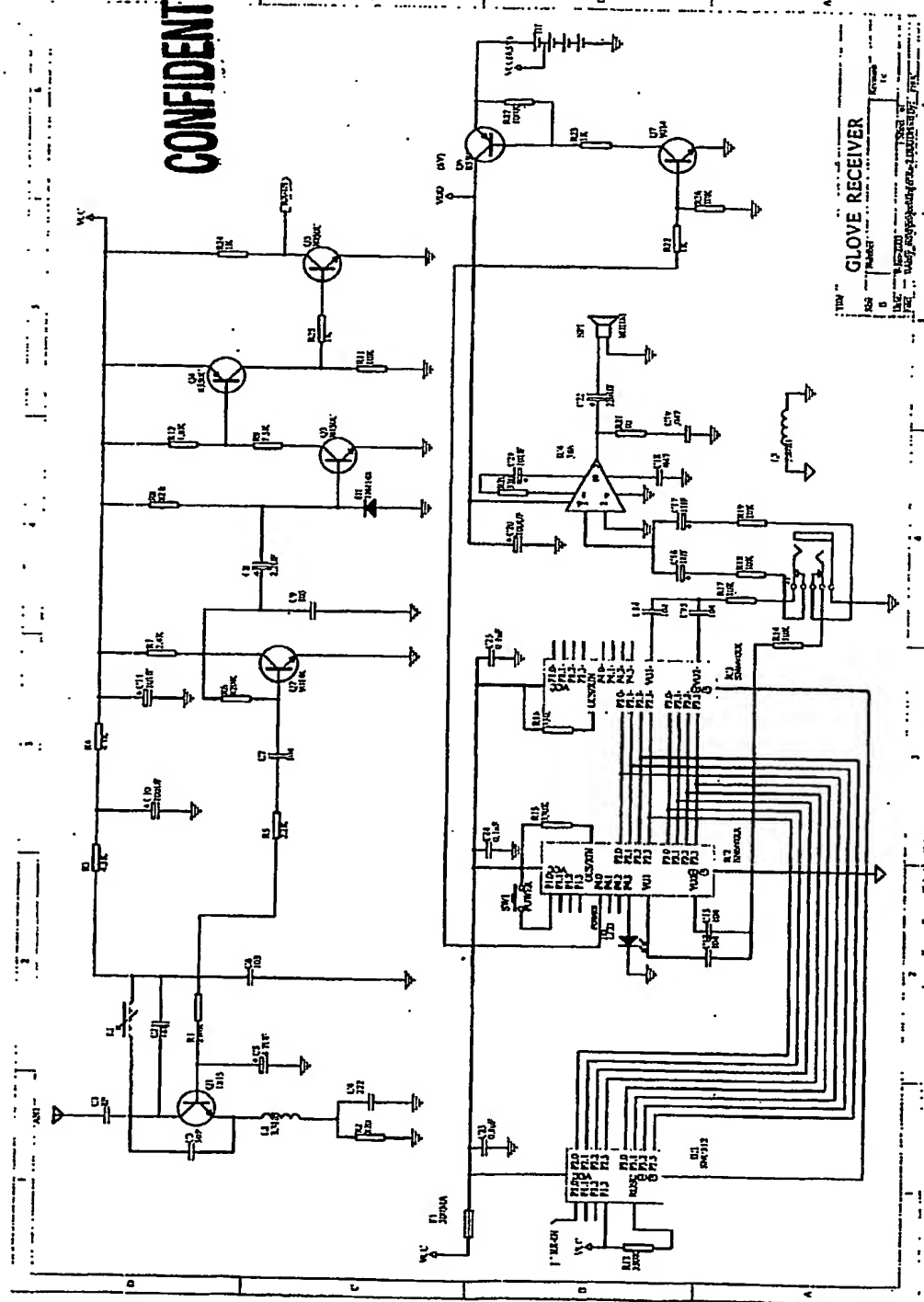
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KADER INDUSTRIAL COMPANY LIMITED

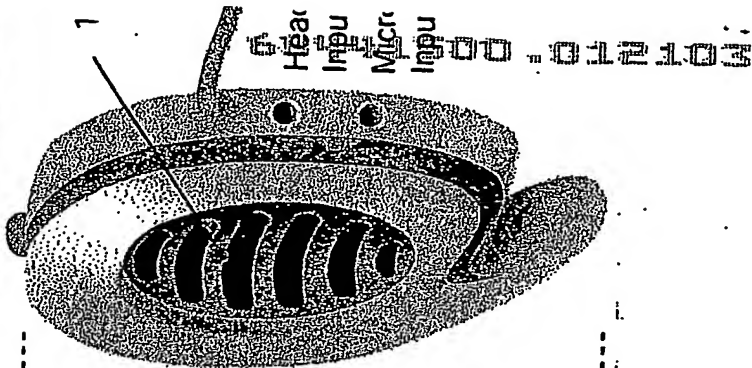
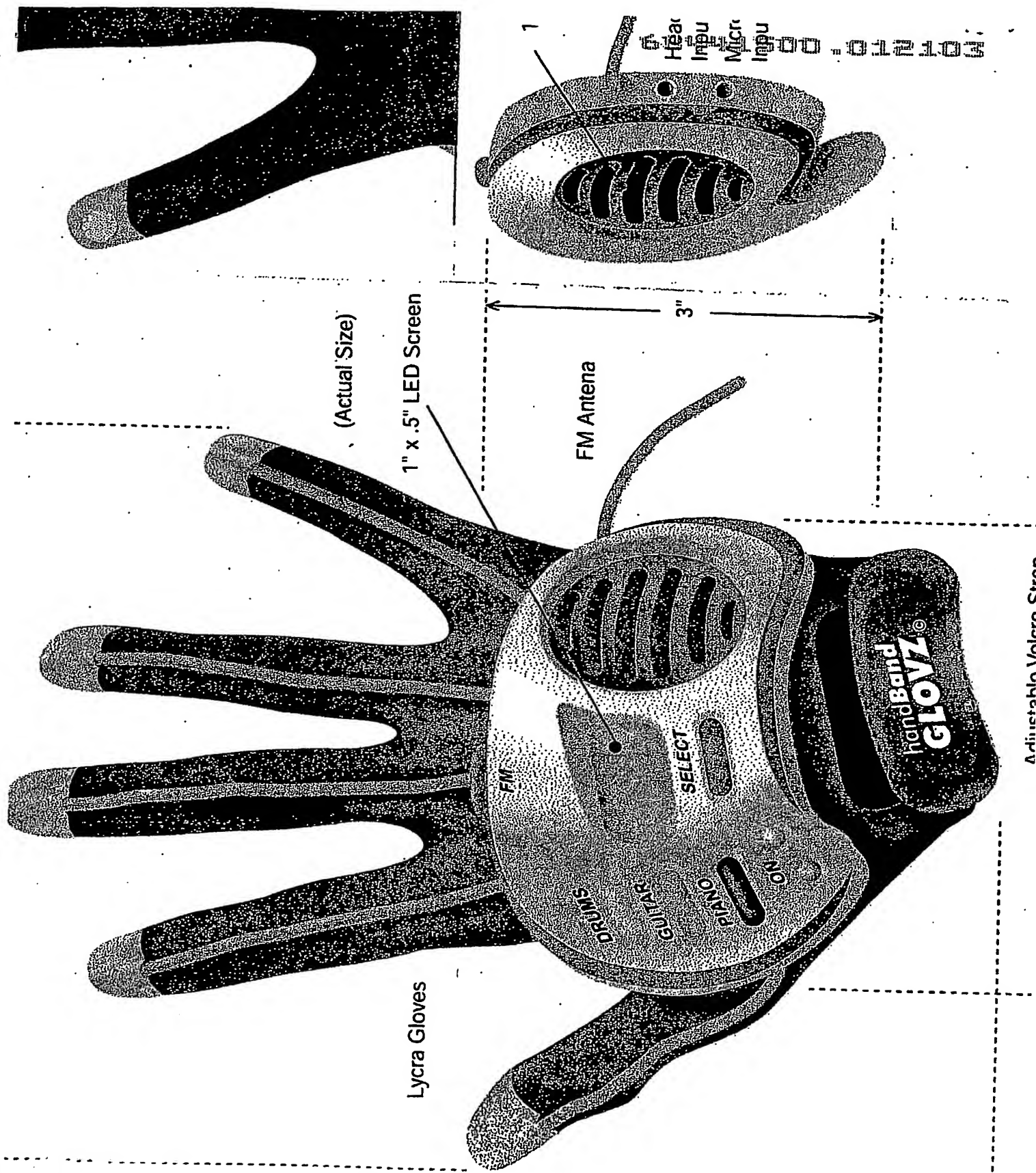
CONFIDENTIAL



A 27

SECRET, CONFIDENTIAL





Hear  
 Input  
 Mic  
 Input

(Actual Size)

1" x .5" LED Screen

FM Antenna

3"

Lycra Gloves

handBand  
**GLOVZ**®

Adjustable Velcro Strap

8"

1" x .5" LED Screen

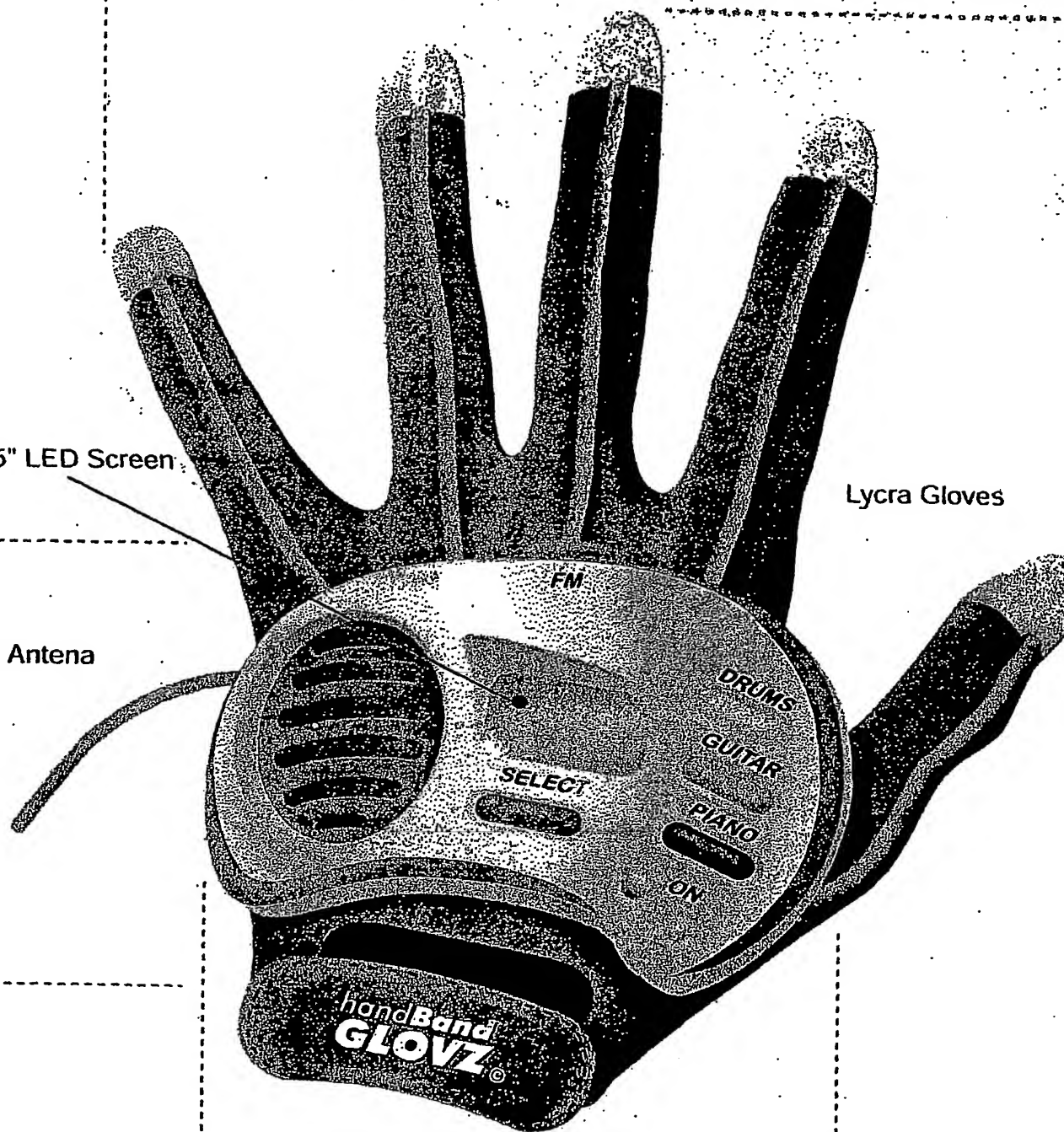
FM Antenna

3"

Lycra Gloves

Adjustable Velcro Strap

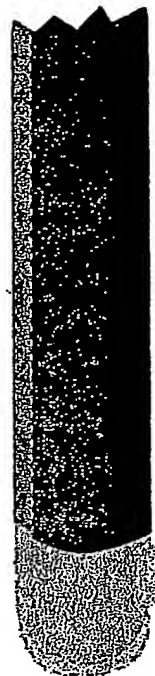
4"



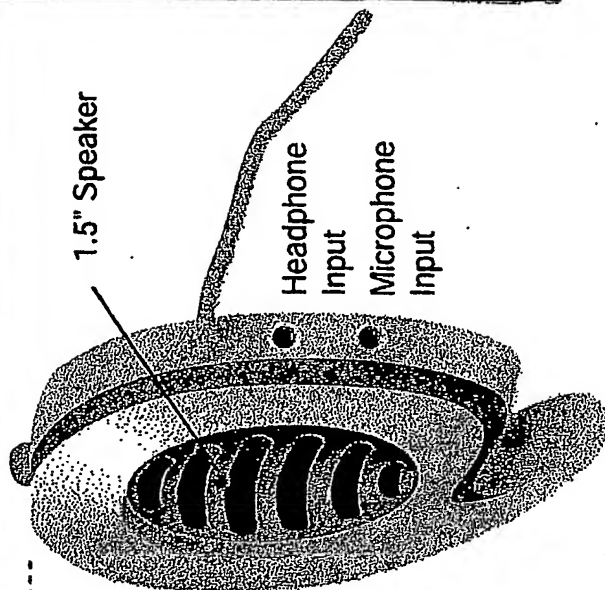




Side View of Glove Finger.  
Sewn-in wire from Sensor Pad to Receiver Device



Touch Sensor Pad



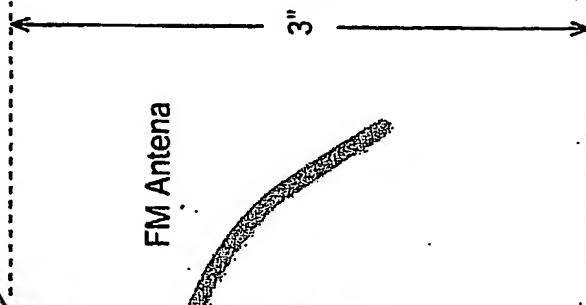
1.5" Speaker

Headphone  
Input

Microphone  
Input

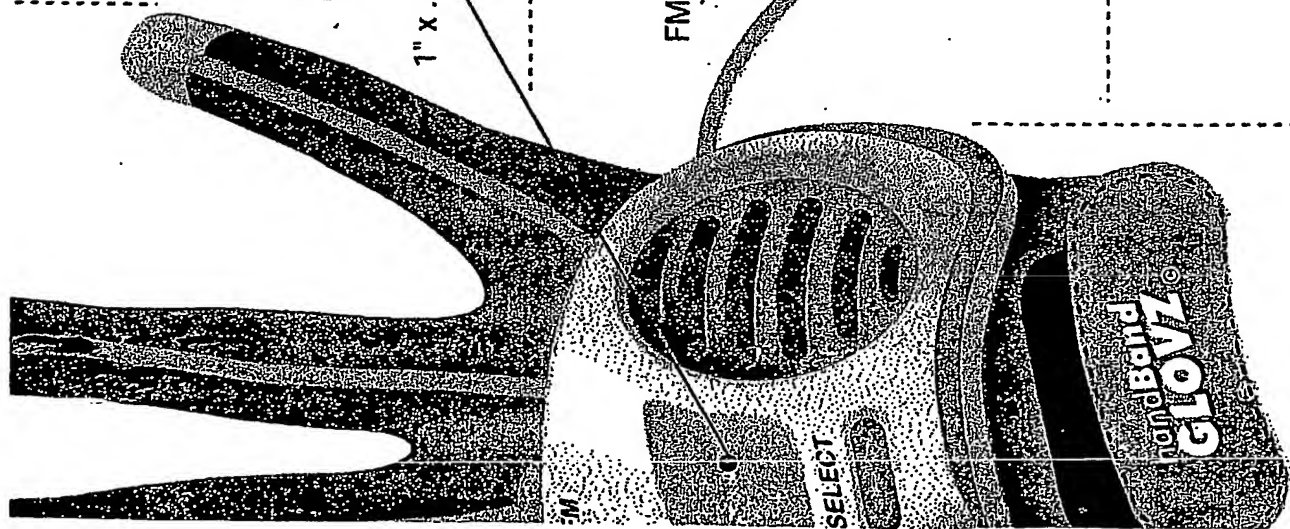
(Actual Size)

1" x .5" LED Screen



3"

FM Antenna



Adjustable Velcro Strap

non-Bond  
**GLOVZ**®

SELECT

A 30

60441500 .012103

A 31

HEADSET

(Actual Size)

42" Wire with Male Plug  
for Left Earphone

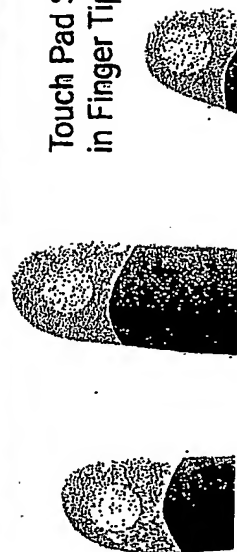
2.125" x 1.875"  
Foam Earphone Pad

Foam Tip Spit Guard  
over Microphone tip

Wire with Male Plug  
Right Earphone

Wire with Male plug  
for Microphone

Touch Pad Sensors  
in Finger Tips



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